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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,821	08/21/2003	Naoto Yamano	YAMA3008/JEK	6178
23364	7590	09/21/2005	EXAMINER	
BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314			ROGERS, DAVID A	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/644,821

Applicant(s)

YAMANO ET AL.

Examiner

David A. Rogers

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 8-13, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 is/are allowed.
- 6) ☒ Claim(s) 8-13 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments filed 08 September 2005 with regard to the teachings of Sinur *et al* (United States Patent Application Publication 2003/0131891) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection is made as noted below.

Furthermore, the previous rejection mistakenly referenced Smith as teaching a lead-in tube (reference item 24). This has been corrected as noted below.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

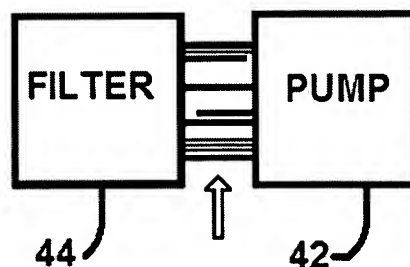
3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of United States Patent 3,794,909 to Smith and United States Patent 6,585,791 to Garito *et al*.

The admitted prior art, shown as figure 13 in the application, is a smoke detection system comprising a lead-in tube (reference item 103a) and an aspirator (reference item 108) positioned downstream of an optical smoke sensor (reference item 104). The lead-in tube and the optical detector are formed a

Art Unit: 2856

linear arrangement so that particle laden air moving through the lead-in tube will pass through the detector and then to the aspirator. The optical sensor is shown in figure 11 of the application. The aspirator forms the actuator mechanism as a rotating part that sucks air through the lead-in tube and then discharges the air. The lead-in tube, as shown, forms a bend prior to being connected to the aspirator. This tube would more than likely have some connecting device to secure the tube to the inlet of the aspirator such that the entire inlet of the aspirator is in fluid communication with the interior of the tube.

The admitted prior art does not expressly teach a straight lead-in tube. Smith teaches an aspirator (reference item 42) for use with a particle sensing apparatus. In reference to Smith's figure 1 (a portion of which is reproduced below), the aspirator (pump) is shown having a straight tube that leads into the inlet of the aspirator. The pertinent section of tube is shown in the reproduced portion below with an arrow. This tube, just like the admitted prior art, would also more than likely have some connecting device to secure the tube to the inlet of the aspirator.

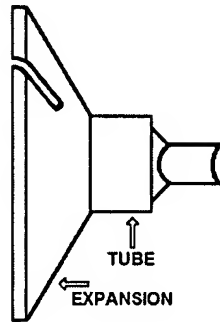


Furthermore, repositioning the prior art aspirator by a 90° rotation is an obvious modification. See *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)

(the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice). In fact, the applicant makes no mention, provides no argument, or provides any intrinsic evidence that shows that it would be impossible or otherwise wholly impermissible to have the aspirator of the admitted prior art relocated at 90°. It would appear that the prior art aspirator is placed in a preferred position for convenience, e.g., for use in a narrow enclosure.

Furthermore, official notice is taken that it is known that bent conduits are prone to particle collection on their inner surface due to impingement with the inner surface. Removal of the bent portion of the lead-in tube of the admitted prior art would eliminate the region where particles (dust, debris, smoke, etc.) tend to accumulate. Particles that accumulate and are subsequently dislodged at a later period may give a false indication of a problem when sensed by the downstream particle detector.

The admitted prior art also does not expressly teach a lead-in tube connected to the aspirator via an expanded part. Garito *et al.* teaches a suction apparatus for pulling smoke from a region. With reference to Garito *et al.*'s figures 1 and 2 (a portion of figure 2 is reproduced below) the apparatus comprises a suction motor (reference item 20) and an inlet tube (reference item 16).



The inlet tube is connected to the apparatus using a continuously-expanding part, as seen in figures 1 and 2. The combination inlet tube and expanding part are formed as a single integral piece structure.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of the applicant's admitted prior art with the teachings of Smith and Garito *et al.* to provide a smoke detector comprising an aspirator connected to a straight lead-in tube via an expanding connector. The expanding part would allow a larger capacity aspirator to be coupled to the smoke sampling system without the need to replace all of the tubing. The larger capacity aspirator would allow more air to be sucked through the detector in less time, thus increasing the probability of early detection of the smoke particles.

4. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Smith and Garito *et al.* as applied to claim 8 above, and further in view of United States Patent 5,438,885 to Zelazny.

The admitted prior art in view of Smith and Garito *et al.* teaches an inlet tube for pulling air containing smoke using an aspirator (vacuum/suctioning device). In the admitted prior art the tube is connected to the aspirator. As seen

in figure 2 of Garito *et al.* an expanding part is connected to the tube using a continuously expanding connector (not numbered). As noted above the expanded connector allows an aspirator with larger pull capacity to be used without having to replace all of the tubing. The applicant's admitted prior art in view of Smith and Garito *et al.* does not expressly teach a continuously smooth curved inner surface.

Zelazny teaches a particle sampler coupled to a pump. As seen in figure 2 the sniffing head is connected to the pump via a continuously expanding coupling member (reference item 40).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of the applicant's admitted prior art in view of Smith and Garito *et al.* with the teachings of Zelazny to provide a connecting member with a continuously smooth inner surface.

The connector (reference item 40) of Zelazny and the connector of Garito *et al.* accomplish the same effect - coupling a small diameter member to a larger diameter member. Zelazny is not cited to show a connector attached to a aspirator. This teaching is found in the admitted prior art in view of Smith and Garito *et al.*

5. Claims 11, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Smith and Garito *et al.* as applied to claims 8 and 9 above, and further in view of Japanese Laid Open Patent Application JP 10267803A to Iwai.

The applicant's admitted prior art in view of Smith and Garito *et al.* teaches the use of an inlet tube for drawing air from a region using an aspirator. With regard to claim 15 Garito *et al.* teaches the use of a single piece structure for the inlet tube (reference item 16) and the expanding part (not numbered). The expanding part includes a continuously smooth surface. The applicant's admitted prior art in view of Smith and Garito *et al.* does not teach the use of a flow restriction region in the inlet tube.

Iwai teaches an apparatus for drawing air using an aspirator (reference item 31). The apparatus comprises inlet tubes (reference items C11 and C12). Within each inlet tube is a flow restriction member (reference items 11 and 12). It is taught that the flow restricting devices help adjust the flow rates of air in the inlet tubes. It would appear from figure 2 that the diameter of the aperture is between 30% to 70% of the inside diameter of the tube.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of the applicant's admitted prior art in view of Smith and Garito *et al.* with the teachings of Iwai to provide a flow restriction device in the inlet tube in order to allow the fine adjustment of the flow rate in the tube.

With regard to claim 15 it is known to form the tube and the expanding part as a single, integral member.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Smith and Garito *et al.* as applied to



claims 8 and 9 above, and further in view of United States Patent Application Publication 2003/0077174 to Kim.

Claim 13 merely describes the use of a normal centrifugal fan/pump (aspirator). The applicant's admitted prior art, as seen in figure 13, shows an aspirator, although not positioned on its side. Repositioning the fan to be on its side is mere relocation of the known parts of the prior art. The fan of the known prior art more than likely has a continuously smooth inner discharge surface. Furthermore, centrifugal aspirators are also widely used in the prior art. See figures 1 and 2 of Kim. In Kim one can clearly see the continuously smooth inner surface of the discharge portion.

See also MPEP §2144.08 and *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment.).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of the admitted prior art in view of Smith and Garito *et al.* with the teachings of Kim to provide a smoke detector comprising a centrifugal fan with a continuously smooth inner discharge surface.

***Allowable Subject Matter***

7. Claim 16 is allowed.


**Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Rogers whose telephone number is (571) 272-2205. The examiner can normally be reached on Monday - Friday (0730 - 1600).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
16 August 2005

  
HEZRON WILLIAMS  
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